UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,635	11/03/2005	Jeong-Il Seo	51876P837	1513

8791 7590 12/01/2008

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
SAUNDERS JR, JOSEPH	
ART UNIT	PAPER NUMBER
2614	
MAIL DATE	DELIVERY MODE
12/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,635	SEO ET AL.	
	Examiner	Art Unit	
	Joseph Saunders	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the communications filed August 7, 2008. Claims 1 – 18 are currently pending and considered below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 – 4 and 10 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over MPEG-21 Overview v.4 in view of Trivi et al. (Rendering MPEG-4 AABIFS Content Through A Low –Level Cross- Platform 3D Audio API), hereinafter Trivi, and Creating Interactive Virtual Auditory Environments.

Claim 1: MPEG-21 Overview v.4 discloses an apparatus for adapting an audio signal (MPEG-21) comprising: an audio usage environment information management means for collecting, describing and managing (The Digital Item Declaration Model describes a set of abstract terms and concepts to form a useful model for defining Digital Items. Within this model, a Digital Item is the digital representation of ?a work?, and as such, it is the thing that is acted upon (managed, described, exchanged, collected, etc.) within the model, 6.2 page 8) audio usage environment information (Natural Environment Characteristics: Description tools that specify the location and time of a User in a given

environment, as well as audio-visual characteristics of the natural environment, which may include auditory noise levels and illumination properties, 6.7 page 15) related to consuming the audio signal (diverse sets of Users each with terminal(s), 6.7 page 14); and an audio adaptation means for adapting the audio signal suitably to the audio usage environment information, wherein the audio usage environment information includes user characteristics information that describes sound field preference of the user for the audio signal (A *resource* is an individually identifiable asset such as a video or audio clip, an image, or a textual asset, 6.2.11 page 9) so that the audio signal is outputted to the user terminal suitably to the audio usage environment information (Resource Adaptation Engine, Figure 4 page 15), wherein the audio usage environment information includes user characteristics information that describes sound field preference of the user for the audio signal (User Characteristics: Description tools that specify the characteristics of a User, including preferences to particular media resources, preferences regarding the presentation of media resources, and the mobility characteristics of a User. Additionally, description tools to support the accessibility of Digital Items to various users, including those with audio-visual impairments, are being considered, 6.7 page 15) but does not disclose wherein the audio adaptation means performs a convolution of the audio signal with an impulse response characterized by the sound field preference of the user.

Trivi discloses in an MPEG-4 terminal supporting AABIFS content allowing for the description and rendering of virtual audio environments (Abstract). Trivi teaches that the environmental model can take a perceptual approach were perceptual parameters

define a set of environmental parameters that describe how the listener will perceive the interaction between the room and the sound source. Trivi further teaches perceptual parameters are used to alter a generic impulse response model or impulse response (Figure 1). The perceptual parameters defining the impulse response further include decay times and energy or amplitude levels. (2.2.3 Environmental model: perceptual approach). Therefore given the teachings of Trivi of defining perceptual parameters for an MPEG-4 terminal to allow for description and rendering of virtual audio environments, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate these teaching in the MPEG-21 standard to allow for a virtual audio environment to be described and rendered based on impulse response according to user preference, since MPEG-21 calls for a way of describing user preferences regarding the presentation of media resources and Trivi's teachings provides such a solution.

Creating Interactive Virtual Auditory Environments further teaches that it is well known in interactive sound rendering that since the impulse response contains all the information about the sound source's radiation and a rooms reverberation, "The most straitforward way to auralize this response is to convolve it with the stimulus signal, usually anechoic sound (free from echoes and reverberation). In this way, we add the sound propagation and reflection information to the sound—that is, render the sound through the modeled space. Therefore, given the teachings of Creating Interactive Virtual Auditory Environments it would have been obvious to one of ordinary skil in the art at the time of the invention to implement the features of MPEG-21 Overview v.4 and

Trivi by performing convolution, especially when the impulse has been parameterized as taught by Trivi, since this has the advantage of saving computational load ("Interactive sound rendering," Creating Interactive Virtual Auditory Environments page 52).

Claim 2: MPEG-21 Overview v.4 , Trivi, and Creating Interactive Virtual Auditory Environments disclose the apparatus as recited in claim 1, wherein the user characteristics information includes impulse response preference information describing the sound field preference of the user by the impulse response, and the audio adaptation means adapts the audio signal, and transmits the adapted audio signal to the user terminal by changing the sound field characteristics of the audio signal based on the impulse response preference information ("perceptual parameters", Trivi 2.2.3 Environmental model: perceptual approach).

Claim 3: MPEG-21 Overview v.4 , Trivi, and Creating Interactive Virtual Auditory Environments disclose the apparatus as recited in claim 2, wherein the impulse response preference information includes sampling frequency preference information, bits per sample preference information, number of channel preference information of the impulse response or URI address information for identifying the impulse response ("material identification, and the correct filter is picked filter is picked from a table," Creating Interactive Virtual Auditory Environments page 54).

Claim 4: MPEG-21 Overview v.4 , Trivi, and Creating Interactive Virtual Auditory Environments disclose the apparatus as recited in claim 1, wherein the user characteristics information includes perceptual parameters preference information describing the sound field preference of the user by perceptual parameters (User Characteristics: Description tools that specify the characteristics of a User, including preferences to particular media resources, preferences regarding the presentation of media resources, and the mobility characteristics of a User. Additionally, description tools to support the accessibility of Digital Items to various users, including those with audio-visual impairments, are being considered, 6.7 page 15), and the audio adaptation means adapts the audio signal and transmits the adapted audio signal to the user terminal by changing the sound field characteristics of the audio signal based on the perceptual parameters preference information (A *resource* is an individually identifiable asset such as a video or audio clip, an image, or a textual asset, 6.2.11 page 9), and the audio adaptation means adapts the audio signal and transmits the adapted audio signal to the user terminal by changing the sound field characteristics of the audio signal based on the preference for the perceptual parameters (Resource Adaptation Engine, 6.7 and Figure 4 pages 14 – 15).

Claims 10 – 13 are substantially similar in scope to claims 1 – 4 respectfully, and therefore are rejected using the same rationale.

4. Claim 5 – 9 and 14 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over MPEG-21 Overview v.4, Trivi, and Creating Interactive Virtual Auditory Environments in view of Synthetic Audio Tools in MPEG-4 Standard.

Claims 5 – 9: MPEG-21 Overview v.4 , Trivi, and Creating Interactive Virtual Auditory Environments disclose the apparatus as recited in claim 4, but do not disclose wherein the perceptual parameters preference information includes information describing direct sound, energy of early room effect, and relative early energy at low and high frequency, wherein the perceptual parameters preference information includes energy of later room effect and relative early decay time, wherein the perceptual parameters preference information includes energy of early room effect related to the direct sound and late decay time, wherein the perceptual parameters preference information includes- relative decay time at a low and high frequency and a reference distance that defines the perceptual parameters, wherein the perceptual parameters preference information includes limitation of a low and high frequency and time limitation.

Synthetic Audio Tools in MPEG-4 Standard explicitly teaches the claimed perceptual parameters originally taught by Trivi (Table 3 and "Perceptual Approach for Creating Room Acoustic Effects" pages 14 – 15). Therefore given that Trivi introduced perceptual parameters but did not define them it would have been obvious to one of ordinary skill in the art to incorporate the explicit definitions as disclosed by Synthetic Audio Tools in MPEG-4 Standard for the perceptual parameters in the invention of

MPEG-21 Overview v.4 , Trivi, and Creating Interactive Virtual Auditory Environments since the parameters are part of the MPEG-4 standard.

Claims 14 – 18 are substantially similar in scope to claims 5 – 9 respectfully, and therefore are rejected using the same rationale.

Response to Arguments

5. Applicant's remark regarding Priority is noted, the objections to the Drawings have been withdrawn, and the Double Patenting rejection has been overcome.

6. Applicant's arguments with respect to claims 1 – 18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./
Examiner, Art Unit 2614

/CURTIS KUNTZ/

Supervisory Patent Examiner, Art Unit 2614